CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
System Software			
System Services			The System Services CSCIs provide functions that are required by all other system software CSCIs for communicating through the operating systems and for performing system specific functions. It provides a portable foundation that isolates other CSCIs from vendor specific dependencies.
	Operating System		This CSC provides the COTS operating system for each subsystem. It also includes standard tools and services (e.g. compilers, editors, distributed file systems) that are normally provided by platform vendors. It provides the basic services (file, communication, time, etc.) used by systems and application programming. There will be an Operating System specific to every platform type in the system.
	Access Control/Security		This CSC provides user authentication and network/system security functionality. It also provides whatever replaces RSYS validation for command issuance. (function and effectivity TBD)
	Network Services		These functions provide services that are related to managing, controlling and accessing the system networks involved with CLCS. This includes network registration services, network management, network protocols, error recovery, and connectivity services It also provides reliable message delivery and includes interfacing with system integrity for assistance with failed subsystems. Input and product are mostly bi-directional. It takes the transmitter's composed messages and instructions, formats them, and sends them across the appropriate network. It also takes the network messages, unformats them, and sends them to the appropriate receiver.
	Inter-process Communications		This function provides point-to-point messaging services between applications to insulate applications from the details of destination location or transport. Provides messaging to multiple destinations (multi-casting) and to all destinations (broadcasting). It also provides object brokering and messaging. Input and product are mostly bi-directional. It takes the transmitter's composed messages and instructions, formats them, and sends them across the appropriate network. It also takes the network messages, unformats them, and sends them to the appropriate receiver.
	Logging Services		This function provides data logging services for saving GSE and vehicle data, as well as system data (messages, configuration changes, etc.). It also provides local logging and retrieval to supplement debugging and trouble shooting. Data is recorded from the RTCN and DCN networks. Data is retrieved over the BIN via Data Recording/Archival and Retrieval CSCI.
	System Message Services		This function provides the services to initiate, log, and distribute predefined messages from system and user application software. The System Message Viewer displays these messages.
	Timer Services		This service provides clocks and timers and service routines for manipulating, synchronizing and using them to all system and user applications. capabilities include alarm clocks, timers and time-out functions.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
	Initialization & Termination Services		This service provides the capability to start and terminate application processes.
	Display Services		This CSC provides the tools, libraries, and support for interacting with HCI display. It includes the RTPS windows and framework for the User Display Service CSC.
	Utility Services		This service provides access to utility functions common across all levels and types of applications (e.g., printing).
Application Services			The Application Services CSCs provide interface functions that are required by all system and user application to perform activities that are common through the Control Room. These services are organized as a collection of class libraries, written in the C++ programming language, that provide an object-oriented view of the fundamental resources and capabilities provided by CLCS.
	-- Basic Services --		The basic services listed below provide tool independent interfaces to CLCS capabilities required by application software.
	FD Services		This CSC provides application commanding and reading of the static and dynamic properties of function designators. Static properties are obtained from the online databank and include items such as nomenclature, type, subtype, and engineering units. Dynamic properties include current value, time of last change, and health status. Inputs to this CSC are requests from applications to issue stimuli to command function designators, reading of static and dynamic properties, requests for queried FD services, activating and inhibiting various FD processing and health, and requests for constraint management services. Processing performed by this CSC includes reading from the current value table or change queue, routing of command stimuli to the Command Support CSCI, routing FD change queue requests to Data Distribution CSC, constraint management requests to Constraint Management CSC, data health requests to Data Health CSC, and data fusion parameter changes to Data Fusion CSC. Outputs generated by this CSC include, command requests to the Command Management and Support CSC, and exceptions propagated to user applications as a result of runtime errors. This CSC also generates system messages (as appropriate) and emits network packets for activities that must be logged to persistent storage.
	Subsystem Services		This CSC provides applications the ability to inspect or effect changes in the state of CLCS subsystems such as Gateways, CCPs, DDPs, and HCIs. The application interface necessary to "Inhibit Data Acquisition for GS1A" is an example of the functionality provided by this CSC. It also provides input and access to the System Integrity CSC. Inputs to this CSC are subsystem health information from the System Integrity CSCs and subsystem command requests generated by applications.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
			Processing performed by this CSC includes delivery of subsystem health change notification to applications and routing of command requests to the Command Support CSCI. Outputs generated by this CSC include subsystem health change events, command requests to the Command Support CSCI, and exceptions propagated to applications as a result of runtime errors. This CSC also generates system messages (as appropriate).
	Onboard Services		This CSC provides applications access to the LDB/GPC onboard interface. Inputs to this CSC are user application requests to perform functions using the Shuttle avionics. Additional inputs include subsystem integrity, status change packets from the System Integrity and Subsystem Integrity CSCs (for LDBA, LDBS, and LDBD) and specific Shuttle telemetry downlist information that is required to ensure that user application command requests are consistent with the onboard avionics configuration (e.g., use of GPC area 1 downlist format ID to determine GPC major mode). Specific functionality is detailed in KSC LPS-OPS-033-8. Processing performed by this CSC includes routing of application requests to the Command Management CSC. Outputs generated by this CSC include onboard interface requests, pass/fail status delivery to the requesting application, and exceptions propagated to user applications as a result of runtime errors. This CSC also generates system messages (as appropriate).
	Inter-application Communication Services		This CSC provides the infrastructure required to enable applications to communicate with each other. Inputs to this CSC include application registration, de-registration, and inter-application communication requests. Communication requests are specified in logical terms and are network transparent (i.e., network locations of communicating applications are not exposed through the interface of this CSC). Communication may be specified as an asynchronous, non-blocking request (event notification) or a synchronous, blocking request (caller/callee). Arbitrary (but sensible) types and amounts of data may be passed between applications.. Processing performed by this CSC include routing of application requests to Interprocess Communication CSC. Outputs generated by this CSC include requests to the transport CSCIs (Data Distribution and/or network services) and exceptions propagated to user applications as a result of runtime errors. This CSC also generates system messages (as appropriate) and emits network packets for activities that must be logged to persistent storage.
	Constraint Management Services		This CSC provides the interface between User and System Applications and the Constraint Management CSC.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
			Inputs to this CSC include application requests to request and control the services provided by Constraint Management on behalf of the requesting application. These requests applications to assert, release, inhibit, activate, status, and status constraints. Processing performed by this CSC include routing of application requests to Constraint Management CSC. Outputs generated by this CSC include returned status to the calling application.
	-- Tailored Services --		The tailored services listed below are the software required to connect and integrate specific application types and tools into CLCS. This includes both development- and run-time integration.
	User Display Services		This CSCI provides the software required to integrate the selected user displays development tool(s) and runtime components into CLCS. Inputs to this CSC include Function Designator values obtained via FD services as well as command requests and inter-application communication requests generated by user interaction with the display. Additional inputs include subsystem health change notification from the System Integrity and Subsystem Health CSCs as well as information about the runtime environment (TCID configuration info, command access for local host, etc.). Processing performed by this CSCI includes update of graphical icons (and other similar GUI components) associated with FD values and management of the mapping between user input events (mouse clicks, etc.) and generation of command and inter-application communication requests. Outputs generated by this CSC include interactions with Subsystem Services, Onboard Services, and Inter-application Communication Services. Additional output includes any exceptions propagated to user applications as a result of runtime errors. This CSC also generates system messages (as appropriate).
	Data Path Services		This CSCI provides the software required to integrate the selected data path logic, development tool(s) and runtime components into CLCS. Inputs to this CSC include databases and/or descriptions of algorithms that define the validity of measurement data, as well as current measurement values. Processing performed by this CSC includes integration/delivery of current measurement values along with supporting data (as identified by the databases described in the Inputs section, above) into the data path tool. Output generated by this CSC includes the computed health/validity of current measurement data and integration of the health/validity status into the data stream via Data Distribution.
	End Item Manager Services		This CSCI provides the software required to integrate the selected end item manager applications, development tool(s) and runtime components into CLCS.
	Prerequisite Control Services		This CSCI provides the software required to integrate the selected prerequisite control logic applications development tool(s) and runtime components into CLCS.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
	Test Application Script Services		This CSCI provides the software required to integrate the selected test application script development tool(s) and runtime components into CLCS.
	User Advisory Services		This CSCI provides the software required to integrate the selected user advisory applications development tool(s) and runtime components into CLCS.
	Math Model Services		This CSCI provides the software required to interface internal and external math model runtime components into the CLCS Test Bed.
	System Application Services		This CSCI provides the software required to support system applications use of Application Service. .
Data Distribution & Processing CSCI			The Data Distribution and Processing CSCI provides the system functions involved in receiving FD change data from the Gateways/CCPs, reordering the data, integrating data health, performing data distribution/logging, and making the data available to consuming applications via Application Services.
	Data Distribution		This CSC supports end-to-end change data flow from Gateways and CCPs via the DDP RTCN interface, to the client application and/or user display. Current data values are maintained in the CVT as they are received. Changed values are queued for requesting applications. Both current and queued values are made available via FD services.
	Data Health		This CSC applies health status to each FD processed by the DDP and provides the health status to applications at the HCI and CCP via Data Distribution. The health of an FD may represent the state of a HW component, a communications path, resultant data from a fusion operation, or application data. The status of the Data Health bits(valid or invalid) determines the usability of the data and may be tested via FD Services.
	Data Fusion		This CSC executes applications defined Data Fusion algorithms using the Data Fusion Tool to compute the value and health of a Data Fusion FD. Any changes to the health/value of a Data Fusion FD are sent to Data Distribution.
	Constraint Management		This CSC performs functions similar to LPS's Front End Processor limit checking, but is much more robust. It maintains a set of "should be" conditions and requesters. Whenever monitored FD value/data health changes, the Constraint Manager determines if the constraint relationships involving that FD are what is expected and notifies the requester of any change in exception status. It supports both end-item and pseudo/fusion FDs. More than one requester can constrain the same FD concurrently with different constraints. A requester (user, Test Application Script, or End-Item Manager) adds a constraint by asserting that an FD "should be" a certain value. Constraint can be simple involving a single FD, or compound, involving relationships between multiple FDs, time and number of change. Constraints can be viewed or used as events to applications for event based operations.
System Viewers CSCI			This CSCI provides the set of programs that allow users to gain online insight into various data within the RTPS.
	Constraint Viewer		This application provides a mechanism for viewing the constraints currently asserted by an application, by summary category or involving a specific FD.
	FD Viewer		This application provides a mechanism for viewing all available information about a Function Designator (FD). This information is resident in the on-line databank, the Data Distribution Processor, Gateways, and the Command and Control Processor. The viewer provides a cyclically updated status of the FD information

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
			until the user dismisses the interface.
	FD Monitor		This application provides a mechanism for viewing FDs for display monitoring similar to CCMS.
	System Message Viewer		This application provides the capability for system and user applications to access a central repository of messages for display to users. It also allows users to register for and receive categories of messages.
	Test Applications Script Viewer		This application provides the user with a common HCI interface to view and control Test Application Scripts.
Command Support CSCI			
	Command Processor		This CSC provides the user interface to manually issue single commands and receive responses at the HCI workstation. Command may involve FDs, subsystems, onboard service, and application control and communications.
	Command Management		This CSC receives command requests, performs authentication, routes the command to identified controlling bid plan manager, perquisite control logic, it's intended destination, and provides a command response back to the requester based on the success or failure of the command. Routes both system and application based commands. Manages command processor overrides.
	Timer Display		This CSC provides display and manual control capability of Timer Services CSC functions to the CCWS operator. This supports GMT/UDT, CDT/MET, and stop watch timer capabilities.
Orbiter Computation Facility, CSCI			This CSCI provides the equivalent of the CCMS OCF applications. Applications include such functions as load/dump/compare of MMUs DEUs and GPCs. It is accessed via the Onboard Services CSC.
System Control CSCI			This CSCI provides the capability to control the RTPS.
	System Integrity		
		Redundancy Management	This CSC provides the capability to monitor Subsystem Integrity data, detect and handle redundancy issues. These services manage redundancy within RTPS for managing system loading, detecting failed subsystems and starting recovery actions.
		Subsystem Integrity	This CSC resides in every processor in the RTPS. It retrieves and transmits CMP and HMP programs and Subsystem health, and performance data to the Redundancy Management function.
	Ops Configuration Manager		This CSC provides the capability to configure and manage RTPS Test Resource Equipment in order to support RTPS operations.
		Activity Management	This CSC provides the capability to manage RTPS test activities. This includes allocation of Test Resource Equipment to an activity, managing activity state, and other OPS CM functions.
		RTPS System SW Load and Initialization	This function provides the capability to load the RTPS System Software into the Test Resource Equipment.
		Test Load	This function provides the capability to load the Test Build Software into the Test Resource Equipment.
		System & Test Load Verification	This function provides the capability to verify that the software loaded in the TRE is the software that is supposed to be loaded there. It also verifies that none of the required files have been corrupted.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
System Diagnostics			This CSCI provides diagnostics to troubleshoot subsystems readiness testing to verify readiness to support and performance monitoring of operational sets.
	On-line Readiness Test		This CSC provides the capability to verify that the hardware in every subsystem is properly configured and operating properly to support mission operations.
	Subsystem Diagnostics		This CSC provides the capability to perform detailed diagnostics on Test Resource Equipment to aid in troubleshooting and improve MTTR.
	Performance/ Capacity Viewers		This CSC provides the capability to monitor performance (e.g., CPU & peripheral utilization, failure prediction) in RTPS subsystems and provide data regarding subsystem capacities and current utilization of the subsystem capacities. Performance data is gathered primarily by Subsystem Integrity CSC.
Common Gateway Services			This CSCI provides Gateway services that are common across all Gateways. It is resident in the Gateway Control Processor (GCP). The Gateway Common Services CSCI is composed of multiple concurrent tasks that perform individual functions in order to support all the resources in the Gateway.
	Gateway Initialization CSC		The Initialization task is responsible for initializing all the CSCs resident on the GCP. It is also responsible for the administration of the Gateway Operating Modes
	Gateway Command Response CSC		This CSC provides a communication path between the Gateway resident processors and the RTCN. The Gateway Command and Response CSC is a set of processes and tables residing on the Gateway Control Processor that conveys both command and response packets between the RTCN and the Gateway's processors.
	The Gateway RTCN Services CSC		This CSC contains the APIs provided by the Network Services CSC which is used by the Gateway components when interfacing with the RTCN. The Gateway RTCN Services CSC also provides the Change Data Packet Builder which builds and transmits the change data via RTCN. The changed data is provided by the FEPC. This transmission is done at the system synchronous rate.
	Gateway Overall Health & Status CSC		This CSC provides the capability to verify the Gateway software is correct and that it hasn't been corrupted.
	Gateway Timer Services CSC		This CSC provides the APIs used to read the time used for tagging. It is also responsible for interrupting the RTCN Services CSC at the system synchronous rate
	Gateway Utility Request CSC		This CSC provides is responsible for transmitting System Messages, error logging and status logging.
Consolidated System Gateway Services			This CSCI provides Consolidated System Gateway services.
GSE Gateway Services			This CSCI provides the GSE unique software capabilities for the GSE Gateway. This CSCI is responsible for providing the interface to HIM measurements and commands for the CLCS system. This CSCI communicates with the RTPS via the GCP Services API that is part of the Common Gateway Services CSCI. The interface to the GSE Ground Data Bus is via the GSE/LDB Interface HWCI.
	GSE Gateway Initialization		This CSC controls the initialization and termination of the GSE unique software. This CSC will accept commands form the GSE Gateway Command Processor CSC to control the initialization sequence of the GSE gateway, including table load commands and activate and terminate commands.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
	GSE Gateway GSE Table Load		This CSC provides the capability to load TCID tables into a GSE Gateway under control of the GSE Gateway Initialization CSC. This CSC will perform initialization and verification of the tables and report status back to the GSE Gateway Initialization CSC.
	GSE Gateway Measurement Processing		This CSC provides the capability to poll the HIMs over the GSE Ground Data Bus using information form the TCID tables, receive the HIM measurement data, process the data and send it to the RTPS via the Common Gateway Services CSCI.
	GSE Gateway Bus Command Processor		This CSC provides the single point interface within the GSE Gateway Services CSCI to accept commands from the RTPS. Commands are routed through the Common Gateway Services CSCI and are accessed using the GCP Services API. This CSC will decode the command and perform the appropriate function within the CSC responsible for executing the command. Responses from the responsible CSC will be routed back to the issuer of the command. This CSC is directly responsible for HIM commands such as issue, set and apply. This CSC will route HIM commands through the GSE Gateway Issue Command CSC and return the response to the issuer of the command
	GSE Gateway Issue Command		This CSC provides the single point interface to the GSE Ground Data Bus (GDB) and the HIMs. The CSC accepts command and measurement requests from other CSCs and routes the HIM response back to the requesting CSC. This CSC is also responsible for detecting and reporting all HIM errors.
	GSE Gateway Table Maintenance		This CSC provides the capability to modify GSE Gateway tables on command from the RTPS.
	GSE Gateway Subsystem Integrity		This CSC provides health and status monitoring and reporting and performs switchover functions.
	GSE Gateway Fuel Cell Simulation		This CSC provides the capability to simulate fuel cells for CITE.
	GSE Gateway HIM Hardware Test		This CSC provides the capability to cyclically test the HIM hardware and report the results of the tests.
LDB Gateway Services			This CSCI provides LDB Gateway Services
	LDB Gateway Initialization		This CSC provides the capability to initialize an LDB Gateway.
	LDB Gateway Table Load		This CSC provides the capability to load TCID tables into an LDB Gateway and perform any necessary initialization
	LDB Gateway Logging		This CSC provides the capability to record data from an LDB Gateway.
	LDB Gateway Process CCP Request		This CSC provides the capability to receive multiple requests for bus operations concurrently and prepare commands to be issued via the LDB.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
	LDB Gateway Bus Communications Processing		This CSC provides the control of the LDB. It operates in two different modes, GPC and DIO. In GPC mode, bus communication is with Orbiter GPCs, where bi-directional data flow is accomplished by adhering to a pre-defined bus protocol. In direct I/O (DIO) mode, communication is performed with bus terminal units directly.
	LDB Gateway Command/Response Management		This CSC provides the capability to receive messages from the GPCs on the LDB and route the messages to the proper SW.
	LDB Gateway Safing Interface		This CSC provides the interface with the system to issue safing commands.
	LDB Gateway Redundancy and Switchover Synchronization		This CSC provides the capability to synchronize the LDB active and standby machines in order to manage LDB redundancy.
	LDB Gateway Redundancy Management		This CSC provides the capability to switch between the LDB active and standby machines.
	LDB Gateway Health and Status Reporting		This CSC provides the capability to monitor the LDB Gateway hardware and software health and status and report to System Control.
	LDB Gateway Bus Interface		This CSC provides the capability to
	LDB Gateway Hardware Diagnostics and Checkout		This CSC provides the capability to diagnose hardware connected to the LDB Gateway and report condition to System Control.
PCM D/L Gateway Services			This CSCI provides the capability to operate a PCM Downlink FEP (i.e., OI, GPC, SSME)
	PCM D/L Gateway Initialization		This CSC provides the capability to initialize an PCM D/L Gateway.
	PCM D/L Gateway Table Load and Initialization		This CSC provides the capability to load TCID tables into an PCM D/L Gateway and perform any necessary initialization
	PCM D/L Gateway Table Maintenance		This CSC provides the capability modify PCM D/L Gateway tables on request from other processors in the RTPS.
	PCM D/L Gateway Refresh		This CSC provides the capability periodically refresh PCM measurement data to the SDC.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
	PCM D/L Gateway Redundancy Management		This CSC provides the capability to switch between the PCM active and standby machines.
	PCM D/L Gateway TBD		More CSCs will be defined for PCM D/L Gateways.
Uplink Gateway Services CSCI			This CSCI provides the capability to
	PCM U/L Gateway Initialization		This CSC provides the capability to initialize an PCM U/L Gateway.
	PCM U/L Gateway Table Load and Initialization		This CSC provides the capability to load TCID tables into an PCM U/L Gateway and perform any necessary initialization
	PCM U/L Gateway Table Maintenance		This CSC provides the capability modify PCM U/L Gateway tables on request from other processors in the RTPS.
	PCM U/L Gateway TBD		More CSCs will be defined for PCM D/L Gateways.
Sim Gateway Services CSCI			This CSCI provides the capability to interface the SGOS runtime to the RTCN without use of Gateways or VSI.
CLCS Development Environment			This CSCI provides the capability to perform pre-build CLCS development functions.
	Configuration Management Environment		This CSC provides the Configuration Management for all software and documentation for CLCS. It includes the CLCS CM Repository, integrating scripts, and user interface shell to initiate all Configuration Management Environment functions.
	System Software Development Tools		This CSC provides the special development tools for System Software development not provided in RTPS. Some of these tools are reused for User Application Software development.
		Regression Test Tools	
	User Application Software Development Tools		This CSC provides special development tools for User Application Software development not provided in RTPS.
		FD Design Tool	This tool provides the capability to temporarily and quickly add, modify or delete FDs for a single user testing in the Test Bed only. FD changes that are intended to become permanent can be exported for submission to DBSAFE for incorporation.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
		TCS-S Compiler	The Test Control Sequencer compiler compiles TCS-S statements for use in the GPCs onboard the Orbiter.
RTPS System SW Build			This CSCI provides the capability to build RTPS System Software. The software is retrieved from the CM Repository and then compiled and linked in a controlled and repeatable manner. Subsystems are associated together to form SCIDs which are prepared for loading by the System Control CSCI.
	Platform Build		This CSC configures and tailors the Operating Systems and any other necessary COTS needed by the RTPS software in all of the RTPS processors. The products of this CSC are Platform images that may be loaded onto each hardware item.
	Subsystem Build		This CSC provides the capability to build RTPS System software loads for each subsystem and form a SCID. The software is retrieved from the CM Repository and then compiled and linked in a controlled and repeatable manner. Subsystems are associated together to form SCIDs which are prepared for loading by the System Control CSCI.
DBSAFE			The DB Shuttle Automated FD Execution (DBSAFE) CSCI provides the services needed to maintain and interact with the data bank. It contains both CCMS and RPS data banks and the information needed to manage the data.
TCID Build & Control			This CSCI provides the capability to build the Test Software to be used in the RTPS.
	FD Directory Build		This CSC provides the functions needed to build a directory for FDs for a specific mission configuration. The equivalent of the On-Line Data Bank will also be built.
	Table Build		This CSC provides the tables needed by the gateway to map the logical representation to the physical end item.
	On-Line Data Bank Build		This CSC builds the On-Line Data Bank.
	OCF Build		This CSC provides the build products to support the Orbiter Computation Facility (OCF) CSCI. Products include load and compare data for DEU, MMU and GPCs.
	Build Utilities		This CSC provides a set of utilities to be used in understanding and controlling the contents of the TCID.
		Load Checker	This function verifies that the binding of applications, which is done at run-time, is correct at build time.
		Cross Reference (IIU)	This function provides a database of external reference data from each application program, maintained to support queries for association of FDs to programs, programs to programs, and programs to FDs.
		TCS-S Configurator	This function links the TCS applications to a TCID by inserting FD information into the interpretive code of the procedure.
Data Recording & Archival			This CSCI provides the capability (in the SDC) to record and archive all RTPS data.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
Data Retrieval			This CSCI provides the capability (in the SDC) to retrieve all data recorded on the SDC and present the data to the requesting user.
CLCS DS Service			This CSCI provides the CLCS equivalent of the SDS (Shuttle Data Stream) products for open ended distribution and use of CLCS test data.
	CLCS DS Client Services		This CSC provides the CLCS DS standard client applications for using the CLCS Data Stream.
	CLCS DS Server Services		This CSC provides the CLCS DS server capability that creates and distributes the CLCS Data Stream.
User Applications			
Near Real-time Advisory			
	Orbiter Power UP System (OPUS)		This CSC provides a real-time expert system developed in Gensym's G2 that performs long-term monitoring (primarily leak detection) of several Orbiter subsystems (OMS/RCS, ECLSS, APU, and Fuel Cell) from landing through launch for up to 4 vehicles in flow.
	APU Neural Net Tool(ANNT)		This CSC provides an automated diagnostics program being implemented in Gensym's Neural Online that provides fast, efficient signature recognition and event detection algorithms that automate the capture of anomalies, off-nominal, and nominal events
	High Speed Display		This CSC provides real-time strip charting of high speed data (25 to 100 Hz) using VI Corp.'s Data Views tool. It is used to display and plot APU chamber pressure, APU and HPU turbine speed, and cryogenic propellant pump speed.
	Propulsion Advisory Tool (PAT)		This CSC performs real-time system diagnostics and engineering assessments on day of launch using Gensym's G2.
	Java View (JView)		This CSC provides a Web Based capability similar to PCGOAL that is platform independent and can be executed from the BIN or the Office Workstation.
Support Advisory			
	Robust CAP Program Web Interface (RCW)		This CSC provides a Web Based retrieval Graphical User Interface to existing Computer Application Programs for Data Retrievals on SDC.
	Advanced Data Analysis Tool (ADAT)		This CSC provides a platform independent Web Based Data Analysis capability for plotting, zooming and analyzing data.
	Interfaces to COTS Packages		This CSC provides interfaces to key COTS packages for analysis of Historical as well as Real-time data.
	Retrieval Data Presentation (RDP)		

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
Real Time Control Applications			
Common Application Support			The Common Application Support CSCI is the Application Software reuse component repository.
	SL-GMS Components		This CSC contains the generic, reusable SL-GMS display objects.
	End Item Components		This CSC contains the generic, end item reusable software objects.
	HMP/CMP Components		This CSC contains the software templates for generating HMPs and CMPs.
	Generic Components		This CSC contains the generic software components, such as linked lists, matrices, etc.
SLWT			The ET Monitor CSCI is the pathfinder for Application Software display development.
	SL-GMS Displays		This CSC provides the 8 prototype displays to support SLWT tests and illustrate the capabilities of the SL-GMS display development tool.
HMF			The HMF CSCI provides the software and associated documentation to support HMF test operations. It is also the pathfinder for the Application Software architecture design on a single application set (OMS/RCS). A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of the HMF application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix.
	FRCS		This CSC provides the application software components (displays, end items, sequences, simulation, etc.) to support HMF test operations on the FRCS.
	ROMS		This CSC provides the application software components (displays, end items, sequences, simulation, etc.) to support HMF test operations on the ROMS.
	LOMS		This CSC provides the application software components (displays, end items, sequences, simulation, etc.) to support HMF test operations on the LOMS.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
Integrated Operations			The Integrated Operations CSCI provides the software and associated documentation to support integrated test operations involving multiple HW subsystems. This CSCI provides those application software components that are common across multiple HW subsystems for specific integrated test operations. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of the integrated test operations. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for integrated test operations. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
	Power Up/Down		This CSC provides the software and associated documentation (including a subsection in the Integrated Operations FRD and SDS) to support vehicle power up/down test operations. It is also the pathfinder for the Application Software architecture design using multiple, integrated application sets (EPDC, ECL, INST and DPS).
APU			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
HYD			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
COMM			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
NAV			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
DPS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
DPSME			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.

CLCS CSCI/CSC Descriptions

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ECLSS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
ECS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
EPDC			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
GLS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.

CLCS CSCI/CSC Descriptions

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GUID			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
FLT CTRLS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
HAZ GAS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
BHYD			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.

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BAPU			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
INST			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
Swing Arm			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
LH2			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.

CLCS CSCI/CSC Descriptions

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LO2			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
MSTR			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
MEQ			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
MPS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.

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SSME			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
OMS/RCS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
PLDTEST			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
PRSD/FC			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
SRSS			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
Water Systems			This CSCI provides the software and associated documentation that is unique to this HW Subsystem. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
CITE			This CSCI provides the software and associated documentation to support CITE test operations. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix. The CSCs will be identified within the Integrated Product Team(s) responsible for delivering application software products for an integrated operation.
CCS			This CSCI provides the software and associated documentation to support CCS test operations. A Functional Requirements Document (FRD), delivered with this CSCI, provides the requirements that specify the functions, capabilities and expectations of this application set software. A Software Design Specification (SDS), delivered with this CSCI, provides the requirements analysis and design results as it is applied to the application software to be developed for this set. It also contains a Requirements Traceability Matrix.
	Power		This CSC provides the application software components (displays, end items, sequences, simulation, etc.) to support CCS Power test operations.

CLCS CSCI/CSC Descriptions

CSCI	CSC	Function	Description
	Water		This CSC provides the application software components (displays, end items, sequences, simulation, etc.) to support CCS Water test operations.
	Pneumatics		This CSC provides the application software components (displays, end items, sequences, simulation, etc.) to support CCS Pneumatics test operations.
	HVAC		This CSC provides the application software components (displays, end items, sequences, simulation, etc.) to support CCS HVAC test operations.

CLCS CSCI/CSC Descriptions

Business and Information Network CSCIs
